CAPACITY MANAGEMENT TOOLS
TECHNICAL MANUAL

Version 2.0

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Department of Veterans Affairs
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Development and Infrastructure Support (DaIS)

Revision History

Documentation Revisions

The following table displays the revision history for this document. Revisions to the documentation are based on patches and new versions released to the field.

Date	Revision	Description	Author
03/24/04	1.0	Initial Capacity Management Tools V. 2.0 software documentation creation.	Robert Kamarowski, Bay Pines, FL OIFO and Thom Blom, Oakland, CA OIFO
04/15/04	1.1	Corrected references to CPRS and OE/RR software versions with regard to Patch OR*3.0*209 in Table 9-1 in Chapter 9, "External Relations" and "Relationship of CM Tools Software with VistA" topic in Chapter 10, "Internal Relations."	Robert Kamarowski, Bay Pines, FL OIFO and Thom Blom, Oakland, CA OIFO
12/20/04	1.2	Reviewed document and edited for the "Data Scrubbing" and the "PDF 508 Compliance" projects. **Data Scrubbing—**Changed all patient/user TEST data to conform to HSD&D standards and conventions as indicated below: • The first three digits (prefix) of any Social Security Numbers (SSN) start with "000" or "666." • Patient or user names are formatted as follows: MMPDPATIENT,[N] or KMPDUSER,[N] respectively, where the N is a number written out and incremented with each new entry (e.g., KMPDPATIENT, ONE, KMPDPATIENT, TWO, etc.). • Other personal demographic-related data (e.g., addresses, phones, IP addresses, etc.) were also changed to be generic. **PDF 508 Compliance—**The final PDF document was recreated and now supports the minimum requirements to be 508 compliant (i.e., accessibility tags, language selection, alternate text for all images/icons, fully functional Web links,	Thom Blom, Oakland, CA OIFO

		successfully passed Adobe Acrobat Quick Check).	
05/11/05	1.3	Updated references to the CP Environment Check [KMPD STATUS] option based on changes introduced with Capacity Management Tools Patch XMPD*2.0*3.	Robert Kamarowski, Bay Pines, FL OIFO and Thom Blom, Oakland, CA OIFO

Table i: Documentation revision history

Patch Revisions

There are no patches for this initial release of the Capacity Management Tools Version 2.0 software. In the future, for a complete list of patches related to this software, please refer to the Patch Module on FORUM.

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- DaIS Program Director—Catherine Pfeil
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- Enterprise VistA Support (EVS) Release Manager—Lewis Tillis
- Technical Writer—Thom Blom

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Orientation

How to Use this Manual

Throughout this manual, advice and instructions are offered regarding the use of Capacity Management Tools software and the functionality it provides for Veterans Health Information Systems and Technology Architecture (VistA) software products.

This manual uses several methods to highlight different aspects of the material:

- Various symbols are used throughout the documentation to alert the reader to special information. The following table gives a description of each of these symbols:

Symbol	Description
	Used to inform the reader of general information including references to additional reading material.
	Used to caution the reader to take special notice of critical information.

Table ii: Documentation symbol descriptions

- Descriptive text is presented in a proportional font (as represented by this font).
- HL7 messages, "snapshots" of computer online displays (i.e., roll-and-scroll screen captures/dialogues) and computer source code, if any, are shown in a *non*-proportional font and enclosed within a box.
  - User's responses to online prompts will be boldface type.
  - The "**<Enter>**" found within these snapshots indicate that the user should press the Enter key on their keyboard. Other special keys are represented within < > angle brackets. For example, pressing the PF1 key can be represented as pressing **<PF1>**.
  - Author's comments, if any, are displayed in italics or as "callout" boxes.

    Callout boxes refer to labels or descriptions usually enclosed within a box, which point to specific areas of a displayed image.

- All uppercase is reserved for the representation of M code, variable names, or the formal name of options, field and file names, and security keys (e.g., the XUPROGMODE key).

How to Obtain Technical Information Online

Exported file, routine, and global documentation can be generated through the use of Kernel, MailMan, and VA FileMan utilities.

Methods of obtaining specific technical information online will be indicated where applicable under the appropriate topic. Please refer to the *Capacity Management Tools Technical Manual* for further information.

Help at Prompts

VistA software provides online help and commonly used system default prompts. Users are encouraged to enter question marks at any response prompt. At the end of the help display, you are immediately returned to the point from which you started. This is an easy way to learn about any aspect of VistA software.

To retrieve online documentation in the form of Help in any VistA character-based product:

- Enter a single question mark ("**?**") at a field/prompt to obtain a brief description. If a field is a pointer, entering one question mark ("**?**") displays the HELP PROMPT field contents and a list of choices, if the list is short. If the list is long, the user will be asked if the entire list should be displayed. A **YES** response will invoke the display. The display can be given a starting point by prefacing the starting point with an up-arrow ("^") as a response. For example, **^M** would start an alphabetic listing at the letter M instead of the letter A while **^127** would start any listing at the 127th entry.
- Enter two question marks ("**??**") at a field/prompt for a more detailed description. Also, if a field is a pointer, entering two question marks displays the HELP PROMPT field contents and the list of choices.
- Enter three question marks ("**???**") at a field/prompt to invoke any additional Help text stored in Help Frames.

Obtaining Data Dictionary Listings

Technical information about files and the fields in files is stored in data dictionaries. You can use the List File Attributes option on the Data Dictionary Utilities submenu in VA FileMan to print formatted data dictionaries.

For details about obtaining data dictionaries and about the formats available, please refer to the "List File Attributes" chapter in the "File Management" section of the *VA FileMan Advanced User Manual*.

Assumptions About the Reader

This manual is written with the assumption that the reader is familiar with the following:

- VistA computing environment
- VA FileMan data structures and terminology
- Microsoft Windows
- M programming language

It provides an overall explanation of configuring the Capacity Management Tools interface and the changes contained in Capacity Management Tools Version 2.0. However, no attempt is made to explain how the overall VistA programming system is integrated and maintained. Such methods and procedures are documented elsewhere. We suggest you look at the various VA home pages on the World Wide Web (WWW) for a general orientation to VistA. For example, go to the Veterans Health Administration (VHA) Office of Information (OI) Health Systems Design & Development (HSD&D) Home Page at the following Web address:

http://vista.med.va.gov/

Reference Materials

Readers who wish to learn more about the Capacity Management Tools software should consult the following:

- *Capacity Management Tools Installation Guide*
- *Capacity Management Tools User Manual*
- Capacity Planning (CP) Services' Home Page at the following Web address:

  http://vista.med.va.gov/capman/default.htm

  This site contains additional information and documentation.

VistA documentation is made available online in Microsoft Word format and Adobe Acrobat Portable Document Format (PDF). The PDF documents *must* be read using the Adobe Acrobat Reader (i.e., ACROREAD.EXE), which is freely distributed by Adobe Systems Incorporated at the following Web address:

http://www.adobe.com/

VistA documentation can be downloaded from the Enterprise VistA Support (EVS) anonymous directories or from the Health Systems Design and Development (HSD&D) VistA Documentation Library (VDL) Web site:

http://www.va.gov/vdl/

For more information on the use of the Adobe Acrobat Reader, please refer to the *Adobe Acrobat Quick Guide* at the following Web address:

http://vista.med.va.gov/iss/acrobat/index.asp

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1. Introduction

This distribution contains Capacity Management Tools software, version 2.0. This version of the software can be installed over any previous test versions of CM Tools without any adverse problems. The current software version is compatible with all current operating system platforms at VA sites.

The Capacity Management Tools software is a fully automated support tool developed by Capacity Planning (CP) Services. It entails the capture of all Veterans Health Information Systems and Technology Architecture (VistA) Health Level Seven (HL7) workload specifics from participating sites. This HL7 workload data is then summarized on a weekly basis and is automatically transferred via network mail (i.e., MailMan) to the Capacity Planning National Database.

The Veterans Health Administration (VHA) developed the Capacity Management Tools software in order to obtain more accurate information regarding the current and future VistA HL7 workload data at VA sites.

Installing the CM Tools software creates the collection process mechanism and other necessary components of the software. The fully automated data collection mechanism entails capturing all VistA HL7 workload specifics at the site into the ^TMP("KMPDH",$J) temporary collection global. The collection mechanism is continuously monitoring each process on the system while trapping VistA HL7 workload data.

On a nightly basis, the CM Tools Background Driver option [KMPD BACKGROUND DRIVER] moves the data within the ^TMP("KMPDH",$J) temporary collection global to the CM HL7 DATA file (#8973.1).Upon completion, the temporary data within the ^TMP("KMPDH",$J) temporary collection global is purged.

The CM Tools Background Driver option [KMPD BACKGROUND DRIVER] monitors and trims (records deleted) the following files to ensure that the correct maximum number of day's data is maintained as determined by the appropriate CP parameters:

- CM HL7 DATA file (#8973.1)—The maximum amount of data collected is determined by the Purge HL7 Data After CP parameter.
- CP TIMING file (#8973.2)—The maximum amount of data collected is determined by the Purge Timing Data After CP parameter.

For more information on the CP parameters, please refer to the "Edit CP Parameters File" topic in Chapter 3, "CM Tools: Options," in the *Capacity Management Tools User Manual*.

On a nightly basis, the CM Tools Background Driver option automatically compresses the information contained within the CP TIMING file (#8973.2) into daily statistics. These daily statistics are converted into an electronic mail message that is automatically transferred via network mail (i.e., VistA MailMan) and merged into a Capacity Planning National Database where this data is used for evaluation purposes.

Also, each Sunday night, the CM Tools Background Driver option automatically compresses the information contained within both the CM HL7 DATA (#8973.1) and CP TIMING (#8973.2) files into weekly statistics. These weekly statistics are converted into an electronic mail message that is automatically transferred via network mail (i.e., VistA MailMan) and merged into a Capacity Planning National Database where this data is used for evaluation purposes.

The data is also available on Capacity Planning (CP) Services' Web site at the following Web addresses:

- Statistics—Provides statistics for each listed site:

  http://vista.med.va.gov/capman/Statistics/Default.htm

- Projections—Provides data trends for each listed site:

  http://vista.med.va.gov/capman/TrendSetter/Default.htm

IRM staff utilizes the options that are available at the site to manage this software. IRM staff responsible for capacity planning tasks at the site can use these options to review system workload trends. Additionally, the IRM staff can review specific VistA HL7 workload data.

2. Implementation and Maintenance

After the initial setup procedures are performed as detailed in the *Capacity Management Tools Installation Guide*, the software basically operates transparent to IRM with minimal impact on system resources. The software uses the Kernel-supplied TaskMan utility to schedule a background task and it is then rescheduled to run on a regular nightly basis. The nightly time frame for data file upload was chosen in order to minimize network impact.

For more information on initial setup procedures, please refer to the "Preliminary Consideration" topic in the *Capacity Management Tools Installation Guide*.

For more information on CM Tools and CM Tool-related options, please refer to Chapter 3, "CM Tools: Options," in the *Capacity Management Tools User Manual*.

Implementation

Namespace

Capacity Planning (CP) Services has been given the KMP* namespace for both routines and global(s). The Capacity Management Tools Software utilizes the KMPD namespace for its routines and global. Therefore, you should review your translation table setting(s) to determine the proper placement for the KMP* global namespace.

^KMPD Global

The Capacity Management Tools V. 2.0 software installation creates the ^KMPD global to store the following:

- CP CODE EVALUATOR file (#8972.1)—This file is for future use.
- CP PARAMETERS file (#8973)—This is a static file.
- CM HL7 DATA file (#8973.1)—This file's records are trimmed nightly.
- CP TIMING file (#8973.2)—This file's records are trimmed nightly.

The CM HL7 DATA (#8973.1) and CP TIMING (#8973.2) files in the ^KMPD global are trimmed (records deleted) by the nightly CM Tools Background Driver option [KMPD BACKGROUND DRIVER] to contain a maximum number of day's data as determined by the appropriate CP parameters in the CP PARAMETERS file (#8973).

For more information on the CP parameters, please refer to the "Edit CP Parameters File" topic in Chapter 3, "CM Tools: Options," in the *Capacity Management Tools User Manual*.

Check CM Tools Background Driver Option

The IRM staff should use the CP Environment Check option [KMPD STATUS] to ensure that the CM Tools Background Driver option [KMPD BACKGROUND DRIVER] is scheduled to run every day at 1:30 a.m.

If the CM Tools Background Driver option [KMPD BACKGROUND DRIVER] is not shown as being scheduled to run in the future, the IRM staff should use TaskMan's Schedule/Unschedule Options option [XUTM SCHEDULE], located under the Taskman Management menu [XUTM MGR], to schedule the KMPD BACKGROUND DRIVER option to run every day at 1:30 a.m.

Capacity Planning Services *strongly* recommends that the CM Tools Background Driver option [KMPD BACKGROUND DRIVER] be scheduled to run every day at 1:30 a.m., because this background driver is the main mechanism by which the following sub-globals are purged nightly:

- **^KMPD(8973.1)—CM HL7 DATA file (#8973.1): Records are purged as prescribed by the Purge HL7 Data After CP parameter, which is stored in the HL7 WEEKS TO KEEP DATA field (#3.11) in the CP PARAMETERS file (#8973). This parameter is edited via the Edit CP Parameters File option [KMPD PARAM EDIT].**
- **^KMPD(8973.2)—CP TIMING file (#8973.2): Records are purged as prescribed by the Purge Timing Data After CP parameter, which is stored in the TIMING WEEKS TO KEEP DATA field (#4.11) in the CP PARAMETERS file (#8973). This parameter is edited via the Edit CP Parameters File option [KMPD PARAM EDIT].**

Modification of the frequency and time may have adverse effects on the size of the temporary ^KMPD(8973.1) and ^KMPD(8973.2) sub-globals and on the number of entries within the CM HL7 DATA file (#8973.1) and CP TIMING (#8973.2) files.

For more information on the Background Driver option, please refer to the "CM Tools Background Driver" topic in Chapter 6, "Exported Options," in this manual.

Maintenance

Information throughout this manual is meant to help IRM in the maintenance of the software. The discussion that follows covers the options available to assist IRM in that maintenance.

CP Tools Manager Menu

All options for the CP Tools Manager Menu [KMPD CM TOOLS MANAGER MENU] can be found under the Capacity Planning menu [XTCM MAIN]. The XTCM MAIN menu is found under the Eve menu and should be assigned to IRM staff member(s) who support(s) this software and other capacity planning tasks.

For more information on the CP Tools Manger Menu, please refer to the "CP Tools Manager Menu" topic in Chapter 6 in this manual or Chapter 3, "CM Tools: Options," in the *Capacity Management User Manual*.

CM Tools Background Driver Option

The IRM staff should first invoke the CP Environment Check option [KMPD STATUS], which is located under the CP Tools Manager Menu [KMPD CM TOOLS MANAGER MENU], to ensure that the CM Tools Background Driver option [KMPD BACKGROUND DRIVER] is scheduled to run every day at 1:30 a.m.

If the CM Tools Background Driver option [KMPD BACKGROUND DRIVER] is not shown as being scheduled to run in the future, the CP Environment Check option [KMPD STATUS] will prompt to queue the task every night at 1:30 a.m. Alternately, you can also use TaskMan's Schedule/Unschedule Options option [XUTM SCHEDULE], located under the Taskman Management menu [XUTM MGR], to schedule the KMPD BACKGROUND DRIVER option to run every day at 1:30 a.m.

Capacity Planning Services *strongly* recommends that the CM Tools Background Driver option [KMPD BACKGROUND DRIVER] be scheduled to run every day at 1:30 a.m., because this background driver is the main mechanism by which the following sub-globals are purged nightly:

- **^KMPD(8973.1)—CM HL7 DATA file (#8973.1): Records are purged as prescribed by the Purge HL7 Data After CP parameter, which is stored in the HL7 WEEKS TO KEEP DATA field (#3.11) in the CP PARAMETERS file (#8973). This parameter is edited via the Edit CP Parameters File option [KMPD PARAM EDIT].**
- **^KMPD(8973.2)—CP TIMING file (#8973.2): Records are purged as prescribed by the Purge Timing Data After CP parameter, which is stored in the TIMING WEEKS TO KEEP DATA field (#4.11) in the CP PARAMETERS file (#8973). This parameter is edited via the Edit CP Parameters File option [KMPD PARAM EDIT].**

Modification of the frequency and time may have adverse effects on the size of the temporary ^KMPD(8973.1) and ^KMPD(8973.2) sub-globals and on the number of entries within the CM HL7 DATA file (#8973.1) and CP TIMING (#8973.2) files.

For more information on the CM Tools Background Driver option [KMPD BACKGROUND DRIVER], please refer to the "CM Tools Background Driver" topic in Chapter 6 in this manual or Chapter 3, "CM Tools: Options," in the *Capacity Management User Manual*.

3. Files

The Capacity Management Tools software consists of two globals with two files: the CM HL7 DATA (#8973.1) and the CP TIMING (#8973.2) files.

This chapter describes the CM Tools-related files including the file number, file name, global location, and description of the files.

For more information on the CM Tools globals, please refer to Chapter 4, "Global Translation, Journaling, and Protection," in this manual.

Files

File Number	File Name	Global	File Description
8972.1	CP CODE EVALUATOR	^KMPD(8972.1	This file was added for the future implementation of the Code Evaluator, which will allow programmers to test the efficiency of M code changes. No data comes with the file.
8973	CP PARAMETERS	^KMPD(8973	This file was created to contain the parameters and data for the following: 1. Current versions/patches of Capacity Planning applications: Resource Usage Monitor (RUM), Statistical Analysis of Global Growth (SAGG), and Capacity Management (CM) Tools. 2. Start, stop, and delta times for all daily/weekly background jobs. 3. The number of weeks to keep data: RUM, HL7, and Timing. 4. Current facility CPU data: • Node • Type of CPU • Number of processors • Processor speed • Amount of memory
8973.1	CM HL7 DATA	^KMPD(8973.1	This file stores VistA HL7 workload information. No data comes with the file.

File Number	File Name	Global	File Description
8973.2	CP TIMING	^KMPD(8973.2	This file stores the timing statistics that are gathered when the Start/Stop Timing Collection option [KMPD TMG START/STOP] is set to "running." During the day, timing data is saved into the temporary ^KMPTMP("KMPDT") global. Each night a background job compiles this temporary data into daily statistics and stores this data in File #8973.1 (CP Timing). The data in File #8973.1 is purged each night to ensure only 30 days of data exist. No data comes with the file.

Table 3-1: CM Tools file list

Templates

As of KMPD*2.0*3 the Capacity Management Tools software exports the following template:

Template	Description
LIST MANAGER TEMPLATE [KMPD STATUS]	This template is used to display the status (environment) check for each application.

Table 3-2: Exported templates—Capacity Management Tools (Patch KMPD*2.0*3)

4. Global Translation, Journaling, and Protection

The following globals are distributed with the Capacity Management Tools software:

Global	Description
^KMPD	The ^KMPD global contains the following files: • CP CODE EVALUATOR file (#8972.1) • CP PARAMETERS file (#8973) • CM HL7 DATA file (#8973.1) • CP TIMING file (#8973.2) Each night this global will be trimmed (records deleted) automatically to contain the correct maximum number of day's data as determined by the appropriate CP parameters. This global is trimmed by the CM Tools Background Driver option [KMPD BACKGROUND DRIVER], which is scheduled to run every day at 1:30 a.m.
^TMP("KMPDH",$J)	The ^TMP("KMPDH",$J) temporary collection global contains data that is gathered from the VistA Health Level Seven (HL7) software by the CM Tools Background Driver option [KMPD BACKGROUND DRIVER], which is scheduled to run every day at 1:30 a.m. Data within this global is compiled and moved into the CM HL7 DATA file (#8973.1). Upon completion, the data within the ^TMP("KMPDH",$J) temporary collection global is purged.
^KMPTMP(“KMPDT”)	The ^KMPTMP(“KMPDT”) temporary collection global contains Timing data for the CPRS Coversheet. Data within this global is compiled and moved into the CP TIMING file (#8973.2). Upon completion, the data within the ^KMPTMP(“KMPDT”) temporary collection global is purged.

Table 4-1: CM Tools global descriptions

Translation

The following table lists the translation requirements/recommendations for the CM Tools globals:

Global	Translation
^KMPD	Mandatory, if the operating system supports this function. It is recommended that all Capacity Planning (CP) globals be translated to the same volume set (i.e., KMP*).
^KMPTMP	Mandatory, if the operating system supports this function. It is recommended that all Capacity Planning (CP) globals be translated to the same volume set (i.e., KMP*).

Table 4-2: CM Tools global translation requirements/recommendations

Journaling

The following table lists the journaling requirements/recommendations for the CM Tools globals:

Global	Journaling
^KMPD	Mandatory, if the operating system supports this function.
^KMPTMP	*Not* recommended.

Table 4-3: CM Tools global journaling requirements/recommendations

Protection

The following table lists the protection settings for the CM Tools globals:

Global Name	Protection	
	DSM for OpenVMS	Caché
^KMPD	System: RW World: RW Group: RW User: RW	Owner: RW Group: RW World: RW Network: RW
^KMPTMP	System: RW World: RW Group: RW User: RW	Owner: RW Group: RW World: RW Network: RW

Table 4-4: CM Tools global protection settings

5. Routines

This chapter contains a list of the routines exported with the Capacity Management Tools software. A brief description of the routines is provided.

Routine Name	Routine Description
KMPDBD01	Uses a Health Level Seven (HL7) API call to transfer HL7 data to the CM HL7 DATA file (#8973.1). This routine is called by the CM Tools Background Driver option [KMPD BACKGROUND DRIVER]. Every Sunday night, this routine creates weekly statistics from the data within the CM HL7 DATA file (#8973.1) and uploads this information to the Capacity Planning National Database. This routine monitors and trims (records deleted) the following files to ensure that the correct maximum number of days data is maintained as determined by the CP parameters: • CM HL7 DATA file (#8973.1)—The maximum amount of data collected is determined by the Purge HL7 Data After CP parameter. • CP TIMING file (#8973.2)—The maximum amount of data collected is determined by the Purge Timing Data After CP parameter.
KMPDHU01 KMPDHU02 KMPDHU03	Compile and compress the Health Level Seven (HL7) data into daily and weekly statistics. These routines are called by the KMPDBD01 routine. • Daily (every night)—These routines take data from the ^KMPTMP(“KMPD” global and compress it into daily statistics and save it into the CM HL7 DATA file (#8973.1). • Weekly (every Sunday night)—These routines upload the weekly HL7 statistical data stored in the CM HL7 DATA file (#8973.1)to the Capacity Planning National Database.

Routine Name	Routine Description
KMPDPOST	Schedules the CM Tools Background Driver option [KMPD BACKGROUND DRIVER] to run every night at 1:30 a.m. This routine moves data previously stored at ^KMPTMP("KMPD","BACKGROUND") to the CP PARAMETERS file (#8973), and deletes the ^KMPTMP("KMPD","BACKGROUND") entries. It is a post-install routine.
KMPDSS	CM Tools Status—Displays the current status of the CM Tools Background Driver option [KMPD BACKGROUND DRIVER]. It is called by the CP Environment Check option [KMPD STATUS]. This routine also shows information on the following files: • CM HL7 DATA file (#8973.1) • CP TIMING file (#8973.2)—Only displays information if the file has data. If the background task is not listed as being scheduled, this routine notifies users in the report output. Users should then queue the task to run every night at 1:30 a.m.
KMPDSS1	CP Status—This routine is associated with the CP Environment Check option [KMPD STATUS].
KMPDSSD	CM Tools Status—This routine is associated with the CP Environment Check option [KMPD STATUS] for HL7 and CM Tools-related data.
KMPDSSD1	CM Tools Status—This routine is associated with the CP Environment Check option [KMPD STATUS] for HL7 and CM Tools-related data.
KMPDSSR	CP Status: Resource Usage Monitor (RUM)—This routine is associated with the CP Environment Check option [KMPD STATUS] for RUM-related data.
KMPDSSS	CP Status: Statistical Analysis of Global Growth (SAGG)—This routine is associated with the CP Environment Check option [KMPD STATUS] for SAGG-related data.
KMPDTM	This routine runs the Timing Monitor option [KMPD TMG MONITOR].
KMPDTP1 KMPDTP2 KMPDTP3 KMPDTP4 KMPDTP5 KMPDTP6	Report routines.

Routine Name	Routine Description
KMPDTP7	
KMPDTU02 KMPDTU10 KMPDTU11 KMPDU KMPDUT2 KMPDUT4 KMPDUT4A KMPDUT4B KMPDUT4C KMPRUTL KMPDUTL1 KMPDUTL2 KMPDUTL3 KMPDUTL4 KMPDUTL5	Generic utility routines that are called by varying Capacity Management Tools routines.

Table 5-1: CM Tools routine list

6. Exported Options

This chapter lists and briefly describes the options that are exported with or related to the Capacity Management Tools software.

For more detailed information on the Capacity Management Tools-related options, please refer to Chapter 3, "CM Tools: Options," in the *Capacity Management User Manual*.

Options *With* Parents

The following table lists the options that are exported with or related to the Capacity Management Tools software. Options are listed hierarchically:

Option Name	Option Menu Text	Type
XTCM MAIN	Capacity Planning	Menu Not exported with CM Tools
KMP MAIL GROUP EDIT	Capacity Planning Mail Group Edit	Action
KMPD CM TOOLS MANAGER MENU	CP Tools Manager Menu	Menu
KMPD STATUS	CP Environment Check option	Run Routine: EN^KMPDSS
KMPD TMG START/STOP	Start/Stop Timing Collection	Run Routine: SST^KMPDSS
KMPD PARAM EDIT	Edit CP Parameters File option	Run Routine: PRM^KMPDSS
KMPD TMG MONITOR	Timing Monitor option	Run Routine: KMPDTM
KMPD CM TOOLS REPORTS	CP Tools Reports	Menu
KMPD TMG REPORTS	Timing Reports	Menu
KMPD TMG AVG TTL	Average Daily Coversheet Load	Run Routine: EN^KMPDTP1
KMPD TMG HRLY TTL	Average Hourly Coversheet Load	Run Routine: EN^KMPDTP3

Option Name	Option Menu Text	Type
KMPD TMG DLY TTL DETAIL	Detailed Daily Coversheet Load	Run Routine: EN^KMPDTP2
KMPD TMG HRLY TTL DETAIL	Detailed Hourly Coversheet Load	Run Routine: EN^KMPDTP4
KMPD TMG TTL ALERT	Threshold Alert	Run Routine: EN^KMPDTP5
KMPD TMG TTL ALERT RT	Real-Time Threshold Alert	Run Routine: EN^KMPDTP6
KMPD TMG HRLY TTL RT	Real-Time Average Hourly Coversheet Load	Run Routine: EN^KMPDTP7

Table 6-1: CM Tools software-related exported or related options *with* parents

Capacity Planning (Synonym: **CM**)	**[XTCM MAIN]**

The Capacity Planning menu [XTCM MAIN] is located under the Operations Management menu [XUSITEMGR], which is located under Kernel's Systems Manager Menu [Eve]. This menu holds all the currently available capacity planning options. The XTCM MAIN menu may be assigned to the IRM staff member(s) who support(s) this software and other capacity planning tasks.

The Capacity Planning menu-related options that will be discussed in the CM Tools documentation include the following:

- Capacity Planning Mail Group Edit option
- CP Tools Manager Menu and subordinate options

Capacity Planning Mail Group Edit (Synonym: **CPG**)	**[KMP MAIL GROUP EDIT]**

The Capacity Planning Mail Group Edit option [KMP MAIL GROUP EDIT] is located under the Capacity Planning menu [XTCM MAIN]. It is used to edit KMP-CAPMAN mail group. It is used to edit the KMP-CAPMAN mail group. The KMP-CAPMAN mail group is defined with the installation of the CM Tools software.

CP Tools Manager Menu (Synonym: **TLS**)	**[KMPD CM TOOLS MANAGER MENU]**

The CP Tools Manager Menu [KMPD CM TOOLS MANAGER MENU] is located under the Capacity Planning menu [XTCM MAIN]. The CP Tools Manager Menu contains the following options:

- CP Environment Check [KMPD STATUS]
- Start/Stop Timing Collection [KMPD TMG START/STOP]
- Edit CP Parameters File [KMPD PARAM EDIT]
- Timing Monitor [KMPD TMG MONITOR]
- CP Tools Reports [KMPD CM TOOLS REPORTS]

CP Environment Check (Synonym: **STA**)	**[KMPD STATUS]**

The CP Environment Check option [KMPD STATUS] is located under the CP Tools Manager Menu [KMPD CM TOOLS MANAGER MENU]. It allows users to check the capacity planning environment at their site. It displays data from the following areas:

- Health Level Seven (HL7)
- Resource Usage Monitor (RUM)
- Statistical Analysis of Global Growth (SAGG)
- Timing

Depending on the report data option chosen (i.e., HL7, RUM, SAGG, or Timing), this option identifies the number of entries within the following files (listed alphabetically by file name):

- CM HL7 DATA file (#8973.1)
- CP TIMING file (#8973.2)
- RESOURCE USAGE MONITOR file (#8971.1)
- SAGG PROJECT file (#8970.1)

Additionally, this option shows the reschedule frequency of the following options (listed alphabetically by option name):

- CM Tools Background Driver option [KMPD BACKGROUND DRIVER].
- RUM Background Driver option [KMPR BACKGROUND DRIVER].
- SAGG Master Background Task option [KMPS SAGG REPORT].

Start/Stop Timing Collection (Synonym: **SST**)	**[KMPD TMG START/STOP]**

The Start/Stop Timing Collection option [KMPD TMG START/STOP] is located under the CP Tools Manager Menu [KMPD CM TOOLS MANAGER MENU]. It is used to initiate or stop the CM Tools collection routines to begin or stop collecting VistA HL7 workload data.

Edit CP Parameters File (Synonym: **PRM**)	**[KMPD PARAM EDIT]**

The Edit CP Parameters File option [KMPD PARAM EDIT] is located on the CP Tools Manager Menu [KMPD CM TOOLS MANAGER MENU]. It allows editing of the Capacity Planning (CP) parameters in the CP PARAMETERS file (#8973).

Timing Monitor (Synonym: **TMT**)	**[KMPD TMG MONITOR]**

The Timing Monitor option [KMPD TMG MONITOR] is located on the CP Tools Manager Menu [KMPD CM TOOLS MANAGER MENU]. This option updates itself automatically and displays the average number of seconds it takes Computerized Patient record System (CPRS) coversheets to load in a period of time. Data is displayed in a bar graph. The x-axis of the bar graph indicates the hours of the day (from 0 up to 24) and the y-axis indicates the average number of seconds it takes to load CPRS coversheets. This option can be left running on a terminal continuously collecting data.

The Timing Monitor displays data for each hour of the day and each new hour as it comes up (i.e., 0 – 24 hours). It updates the data according to the value in the MONITOR UPDATE RATE - MINUTES field (#19.01) in the CP PARAMETERS file (#8973). If there is no entry in Field #19.01, the default is every 10 minutes. The CPRS coversheet load data is displayed in a bar graph for each hour the Timing Monitor is running. If the Timing Monitor is run continuously, the cycle repeats every 24 hours overlaying/replacing previous data and adjusting the bar graph accordingly. The bar graph is also adjusted for the latest information gathered based on the value in the MONITOR UPDATE RATE - MINUTES field (#19.01) in the CP PARAMETERS file (#8973).

The Timing Monitor also displays an Alert Message near the bottom of the screen if the average number of seconds to load a CPRS coversheet exceeds the value of the MONITOR ALERT - SECONDS field (#19.02) in the CP PARAMETERS file (#8973). If there is no entry in Field #19.02, the default is 30 seconds. Both of these parameters can be edited using the Edit CP Parameters File option [KMPD PARAM EDIT].

CP Tools Reports (Synonym: **RPT**)	**[KMPD CM TOOLS REPORTS]**

The CP Tools Reports menu [KMPD CM TOOLS REPORTS] is located under the CP Tools Manager Menu [KMPD CM TOOLS MANAGER MENU]. It contains the following option:

- Timing Reports [KMPD TMG REPORTS]

Timing Reports (Synonym: **TMG**)	**[KMPD TMG REPORTS]**

The Timing Reports menu [KMPD TMG REPORTS] is located under the CP Tools Reports menu [KMPD CM TOOLS REPORTS]. It contains the following report options:

- Average Daily Coversheet Load [KMPD TMG AVG TTL]
- Average Hourly Coversheet Load [KMPD TMG HRLY TTL]
- Detailed Daily Coversheet Load [KMPD TMG DLY TTL DETAIL]
- Detailed Hourly Coversheet Load [KMPD TMG HRLY TTL DETAIL]
- Threshold Alert [KMPD TMG TTL ALERT]
- Real-Time Threshold Alert [KMPD TMG TTL ALERT RT]
- Real-Time Average Hourly Coversheet Load [KMPD TMG HRLY TTL RT]

Average Daily Coversheet Load (Synonym: **AVD**)	**[KMPD TMG AVG TTL]**

The Average Daily Coversheet Load option [KMPD TMG AVG TTL] is located on the Timing Reports menu [KMPD TMG REPORTS]. It produces a report that displays the daily average time-to-load value for the coversheet at a site. Average time-to-load values are given for either daily prime time or non-prime time periods.

Average Hourly Coversheet Load (Synonym: **AVH**)	**[KMPD TMG HRLY TTL]**

The Average Hourly Coversheet Load option [KMPD TMG HRLY TTL] is located on the Timing Reports menu [KMPD TMG REPORTS]. It produces a report that displays the hourly average time-to-load value for the coversheet at a site over a 24-hour period.

Detailed Daily Coversheet Load (Synonym: **DTD**)	**[KMPD TMG DLY TTL DETAIL]**

The Detailed Daily Coversheet Load option [KMPD TMG DLY TTL DETAIL] is located on the Timing Reports menu [KMPD TMG REPORTS]. It produces a report that displays the daily time-to-load values for the coversheet at a site. The report breaks the time-to-load metrics into ten second groupings.

Detailed Hourly Coversheet Load (Synonym: **DTH**)	**[KMPD TMG HRLY TTL DETAIL]**

The Detailed Hourly Coversheet Load option [KMPD TMG HRLY TTL DETAIL] is located on the Timing Reports menu [KMPD TMG REPORTS]. It produces a report that displays the hourly time-to-

load values for the coversheet at a site. The report breaks the time-to-load metrics into ten second groupings.

Threshold Alert (Synonym: **TAL**)	**[KMPD TMG TTL ALERT]**

The Threshold Alert option [KMPD TMG TTL ALERT] is located on the Timing Reports menu [KMPD TMG REPORTS]. It produces a report that displays the particular coversheet loads that had excessive time-to-load values. This report searches for a particular person, client name, or Internet Protocol (IP) address.

Real-Time Threshold Alert (Synonym: **RTA**)	**[KMPD TMG TTL ALERT RT]**

The Real-Time Threshold Alert option [KMPD TMG TTL ALERT RT] is located on the Timing Reports menu [KMPD TMG REPORTS]. It produces a report that displays the particular coversheet loads that have excessive time-to-load values for TODAY (real-time). This report searches for a particular person, client name, or Internet Protocol (IP) address.

Real-Time Average Hourly Coversheet Load (Synonym: **RAV**)	**[KMPD TMG HRLY TTL RT]**

The Real-Time Average Hourly Coversheet Load option [KMPD TMG HRLY TTL RT] is located on the Timing Reports menu [KMPD TMG REPORTS]. It produces a report that displays the hourly average time-to-load value for the coversheet at a site over a 24-hour period.

Options *Without* Parents

The following option does not appear on any menu:

Option Name	Option Menu Text	Type
KMPD BACKGROUND DRIVER	CM Tools Background Driver	Run Routine: KMPDBD01

Table 6-2: CM Tools software-related exported or related options *without* parents

CM Tools Background Driver	**[KMPD BACKGROUND DRIVER]**

The CM Tools Background Driver option [KMPD BACKGROUND DRIVER] is *not* assigned to any menu. This option is scheduled through TaskMan to start the Capacity Management Tools software's background routine.

This option will compress the CM Tools statistics located in the CM HL7 DATA file (#8973.1) into daily statistics. This option must be queued to run each day on off hours.

Capacity Planning Services *strongly* recommends that the CM Tools Background Driver option [KMPD BACKGROUND DRIVER] be scheduled to run every day at 1:30 a.m., because this background driver is the main mechanism by which the following sub-globals are purged nightly:

- **^KMPD(8973.1)—CM HL7 DATA file (#8973.1): Records are purged as prescribed by the Purge HL7 Data After CP parameter, which is stored in the HL7 WEEKS TO KEEP DATA field (#3.11) in the CP PARAMETERS file (#8973). This parameter is edited via the Edit CP Parameters File option [KMPD PARAM EDIT].**
- **^KMPD(8973.2)—CP TIMING file (#8973.2): Records are purged as prescribed by the Purge Timing Data After CP parameter, which is stored in the TIMING WEEKS TO KEEP DATA field (#4.11) in the CP PARAMETERS file (#8973). This parameter is edited via the Edit CP Parameters File option [KMPD PARAM EDIT].**

Modification of the frequency and time may have adverse effects on the size of the temporary ^KMPD(8973.1) and ^KMPD(8973.2) sub-globals and on the number of entries within the CM HL7 DATA file (#8973.1) and CP TIMING (#8973.2) files.

This option should be (re)scheduled with the Schedule/Unschedule Options option [XUTM SCHEDULE] located under the Taskman Management menu [XUTM MGR].

For more information on any of these options, please refer to Chapter 3, "CM Tools: Options," in the *Capacity Management Tools User Manual*.

Protocols

The Capacity Management Tools software does *not* export any protocols with this version.

7. Archiving and Purging

Archiving

The Capacity Management Tools software contains two files that are purged:

- CM HL7 DATA (#8973.1)
- CP TIMING file (#8973.2)

Every Sunday night, the CM Tools Background Driver option [KMPD BACKGROUND DRIVER] monitors and trims (records deleted) the following files to ensure that the correct maximum number of day's data is maintained as determined by the appropriate CP parameters:

- CM HL7 DATA file (#8973.1)—Records are purged as prescribed by the Purge HL7 Data After CP parameter, which is stored in the HL7 WEEKS TO KEEP DATA field (#3.11) in the CP PARAMETERS file (#8973). This parameter is edited via the Edit CP Parameters File option [KMPD PARAM EDIT].
- CP TIMING file (#8973.2)—Records are purged as prescribed by the Purge Timing Data After CP parameter, which is stored in the TIMING WEEKS TO KEEP DATA field (#4.11) in the CP PARAMETERS file (#8973). This parameter is edited via the Edit CP Parameters File option [KMPD PARAM EDIT].

Since the Capacity Management Tools software automatically maintains a fixed amount of data at the site, archiving functions are not necessary and are not provided.

For more information on the CM Tools Background Driver option and the CP parameters, please refer to Chapter 3, "CM Tools: Options," in the *Capacity Management Tools User Manual*.

Purging

Resource usage data is accumulated into the ^TMP("KMPDH",$J) temporary collection global and is purged (killed) every day at 1:30 a.m. by the CM Tools Background Driver option [KMPD BACKGROUND DRIVER] after being moved into the following files:

- CM HL7 DATA (#8973.1)
- CP TIMING file (#8973.2)

For more information on the ^TMP("KMPDH",$J) global, please refer to Chapter 4, "Global Translation, Journaling, and Protection," in this manual.

The CM Tools Background Driver option [KMPD BACKGROUND DRIVER] monitors and trims (records deleted) the following files to ensure that the correct maximum number of day's data is maintained as determined by the appropriate CP parameters:

- CM HL7 DATA file (#8973.1)—Records are purged as prescribed by the Purge HL7 Data After CP parameter, which is stored in the HL7 WEEKS TO KEEP DATA field (#3.11) in the CP PARAMETERS file (#8973). This parameter is edited via the Edit CP Parameters File option [KMPD PARAM EDIT].
- CP TIMING file (#8973.2)—Records are purged as prescribed by the Purge Timing Data After CP parameter, which is stored in the TIMING WEEKS TO KEEP DATA field (#4.11) in the CP PARAMETERS file (#8973). This parameter is edited via the Edit CP Parameters File option [KMPD PARAM EDIT].

Since the Capacity Management Tools software automatically maintains a fixed amount of data at the site, purging functions are not necessary and are *not* provided.

For more information on the CM HL7 DATA (#8973.1) and CP TIMING (#8973.2) files, please refer to Chapter 3, "Files," in this manual.

For more information on the CM Tools Background Driver option and CP parameters, please refer to Chapter 3, "CM Tools: Options," in the *Capacity Management User Manual*.

8. Callable Routines

This version of the Capacity Management Tools software does *not* provide any callable routine entry points (i.e., Application Program Interfaces [APIs]) that are available for general use.

9. External Relations

VistA Software Requirements

The Capacity Management Tools software relies on the following VistA software to run effectively (listed alphabetically):

Software	Version	Patch Information
Computerized Patient Record System (CPRS) GUI	23.0	Fully patched. The CM Tools software loads without CPRS GUI V. 23 and OE/RR V. 3.0; however, in order to start collecting timing data and enable the data collection and report-related CM Tools software options, Patch OR*3.0*209 must also be installed.
Order Entry/Results Reporting (OE/RR)	3.0	
Health Level Seven (HL7)	1.6	Fully patched. This version of Capacity Management Tools software loads without VistA Health Level Seven (HL7) Patch HL*1.6*79; however, in order to start collecting HL7 statistics, HL7 Patch #79 must also be installed.
Kernel	8.0	Fully patched.
Kernel Toolkit	7.3	Fully patched.
MailMan	8.0	Fully patched.
VA FileMan	22.0	Fully patched.

Table 9-1: External Relations—VistA software

This version of Capacity Management Tools software utilizes a VistA Health Level Seven (HL7) HLUCM routine that contains a specific API call for the Capacity Planning (CP) Services software developers. The HLUCM routine contains code that enables use of the $$CM API call to obtain HL7 usage information. The Health Level Seven HLUCM routine was introduced with the issuance of Health Level Seven Patch HL*1.6*79.

Also, this software depends on the installation of the Computerized Patient Record System (CPRS) in order to run the data collection and report-related CM Tools software options.

DBA Approvals and Database Integration Agreements

The Database Administrator (DBA) maintains a list of Integration Agreements (IAs) or mutual agreements between software developers allowing the use of internal entry points or other software-specific features that are not available to the general programming public.

This version of Capacity Management Tools software is *not* dependent on any agreements.

To obtain the current list of IAs, if any, to which the Capacity Planning (CP) Services' CM Tools software (KMPD) is a custodian:

1. Sign on to the FORUM system (forum.va.gov).
2. Go to the DBA menu [DBA].
3. Select the Integration Agreements Menu option [DBA IA ISC].
4. Select the Custodial Package Menu option [DBA IA CUSTODIAL MENU].
5. Choose the ACTIVE by Custodial Package option [DBA IA CUSTODIAL].
6. When this option prompts you for a package, enter **CAPACITY MANAGEMENT TOOLS** or **KMPD**
7. All current IAs to which the Capacity Planning (CP) Services' RUM software is a custodian are listed.

To obtain detailed information on a specific integration agreement:

1. Sign on to the FORUM system (forum.va.gov).
2. Go to the DBA menu [DBA].
3. Select the Integration Agreements Menu option [DBA IA ISC].
4. Select the Inquire option [DBA IA INQUIRY].
5. When prompted for "INTEGRATION REFERENCES," enter the specific integration agreement number of the IA you would like to display.
6. The option then lists the full text of the IA you requested.

To obtain the current list of IAs, if any, to which the Capacity Planning (CP) Services' CM Tools software (KMPD) is a subscriber:

1. Sign on to the FORUM system (forum.va.gov).
2. Go to the DBA menu [DBA].
3. Select the Integration Agreements Menu option [DBA IA ISC].
4. Select the Subscriber Package Menu option [DBA IA SUBSCRIBER MENU].
5. Choose the Print ACTIVE by Subscribing Package option [DBA IA SUBSCRIBER].
6. When prompted with "START WITH SUBSCRIBING PACKAGE," enter **KMPD** (in uppercase). When prompted with "GO TO SUBSCRIBING PACKAGE," enter **KMPD** (in uppercase).
7. All current IAs to which the Capacity Planning (CP) Services' CM Tools software is a subscriber are listed.

10. Internal Relations

Option Dependencies

All options in the Capacity Management Tools software under the CP Tools Manager Menu [KMPD MANAGER MENU] can function independently.

Only TaskMan's Schedule/Unschedule Options option [XUTM SCHEDULE], located under the Taskman Management menu [XUTM MGR], can invoke the CM Tools Background Driver option [KMPD BACKGROUND DRIVER].

For more information regarding the Capacity Management Tools options, please refer to Chapter 3, "CM Tools: Options," in the *Capacity Management Tools User Manual*.

Relationship of CM Tools Software with VistA

CPRS GUI V. 23.0 and OE/RR V. 3

This version of Capacity Management Tools software loads without CPRS GUI V. 23 and OE/RR V. 3.0; however, in order to start collecting timing data and enable the data collection and report-related CM Tools software options, Patch OR*3.0*209 must also be installed.

For more information on the CM Tools report-related software options, please refer to the "Timing Reports" topic in Chapter 6, "Exported Options," in this manual.

HL7 V. 1.6

This version of Capacity Management Tools software loads without VistA Health Level Seven (HL7) Patch HL*1.6*79; however, in order to start collecting HL7 statistics, HL7 Patch #79 must also be installed.

HL7 Patch #79 created the following three APIs, which are used for calculating the volume of HL7 activity at a site over a user-defined period of time:

- $$CM^HLUCM
- $$CM2^HLUCM
- $$CM2F^HLUCM

These APIs calculate the volume of HL7 activity over a period of time. The information collected includes the following:

- Total number characters in the messages.
- Total Number of messages or message units.
- Total time elapsed for transmission of messages.

For more information regarding VistA HL7 Patch HL*1.6*103 and the APIs, please refer to the HL*1.6*103 patch description in the Patch Module on FORUM.

Namespace

Capacity Planning (CP) Services has been given the KMP* namespace for both routines and global(s). The Capacity Management Tools software utilizes the KMPD namespace for its routines and global. Therefore, you should review your translation table setting(s) to determine the proper placement for the KMP* global namespace.

11. Software-wide and Key Variables

The Capacity Management Tools software does *not* employ the use of software-wide or key variables.

12. SAC Exemptions

This version of the Capacity Management Tools software does *not* have any Programming Standards and Conventions (SAC) exemptions.

13. Software Product Security

Security Management

There are *no* special legal requirements involved in the use of the Capacity Management Tools software.

Mail Groups and Alerts

Mail Groups

This version of the Capacity Management Tools software creates the following mail group:

KMP-CAPMAN.

Alerts

This version of the Capacity Management Tools software does *not* make use of alerts.

Remote Systems

This version of the Capacity Management Tools software transmits the following to the Capacity Planning National Database located at the Albany OI Field Office:

- **VistA Health Level Seven (HL7) Workload Information—**VistA HL7 workload data is summarized and transmitted on a weekly basis.
- **VistA Timing Data—**Timing data is summarized and transmitted on a daily and weekly basis.

Data collected is automatically transferred via network mail (i.e., VistA MailMan) to the Capacity Planning National Database. The data is displayed graphically on the Capacity Planning Statistics Web page located at:

http://vista.med.va.gov/capman/Statistics/Default.htm

For more information on the Capacity Planning National Database and data display, please refer to the "Statistics and Projections" topic in Chapter 2, "CM Tools: Software Overview and Use," in the *Capacity Management Tools User Manua*l.

Interfacing

No *non*-VA products are embedded in or required by this version of the Capacity Management Tools software, other than those provided by the underlying operating systems.

Electronic Signatures

There are *no* electronic signatures used within this version of the Capacity Management Tools software.

Security Keys

There are *no* specific security keys exported with this version of the Capacity Management Tools software.

File Security

This version of the Capacity Management Tools software establishes the following security over its files:

File Number	File Name	DD	RD	WR	DEL	LAYGO	AUDIT
8972	CP CODE EVALUATOR	@	@	@	@	@	@
8973	CP PARAMETERS	@	@	@	@	@	@
8973.1	CM HL7 DATA	@	@	@	@	@	@
8973.2	CP TIMING	@	@	@	@	@	@

Table 13-1: CM Tools VA FileMan file protection

Official Policies

There are *no* special legal requirements involved in the use of the Capacity Management Tools software interface.

Distribution of the Capacity Management Tools software is unrestricted.

Glossary

CAPACITY PLANNING	The process of assessing a system's capacity and evaluating its efficiency relative to workload in an attempt to optimize system performance. (Formerly known as Capacity Management.)
CM TOOLS	**C**apacity **M**anagement Tools. A fully automated support tool developed by Capacity Planning (CP) Services, which entails the daily capture of VistA HL7 workload information from participating sites.
COVERSHEET	The Computerized Patient Record System (CPRS) coversheet, which is the main CPRS page. This main page is a screen of the CPRS patient chart that displays an overview of the patient's record.
PRIME TIME HOURS	Prime time hours are 8 a.m. to 5 p.m. Monday through Friday, *excluding* holidays. Non-prime time hours are all other hours (i.e., weekends, nights and holidays).

For a comprehensive list of commonly used infrastructure- and security-related terms and definitions, please visit the ISS Glossary Web page at the following Web address:

http://vista.med.va.gov/iss/glossary.asp

For a comprehensive list of acronyms, please visit the ISS Acronyms Web site at the following Web address:

http://vista/med/va/gov/iss/acronyms/index.asp

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